CENTIPEDE CARE AND HUSBANDRY

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Abstract

Similar to other exotic pets, maintaining invertebrates in captivity is continuing to increase. Therefore, adequate husbandry is vital to achieve success. Centipedes have an aggressive nature, are venomous, and potentially dangerous to humans; they require specific environmental conditions and possess unique anatomic and physiologic features. Considering these circumstances, the clinician must be knowledgeable on the proper approach to handle and examine centipedes. The objective of this article is to aid the clinician in treating centipedes, providing important information on how to keep centipedes in captivity, to recognize potential signs of illness, and to perform common procedures such as hemolymph sampling.

Key words: Arthropod; centipede; Chilopoda; husbandry; medicine; Myriapoda

Centipedes are arthropods belonging to the class Chilopoda, which comprises approximately 3300 species belonging to 5 existing orders: Geophilomorpha, Scolopendromorpha, Lithobiomorpha, Scutigeromorpha, and Craterostigmomorpha. These animals have a worldwide distribution, except Antarctica, with the greatest diversity occurring in the tropics and warm temperate regions.[1] Some geophilomorphs have adapted to seashore environs, a difficult habitat even for insects.[2]

Most centipedes are adapted to burrowing and live in soil and leaf litter or under bark and stones.[2,3] Owing to the different habits and habitats of centipedes, the anatomic features between the genera can have considerable variation. Basically, centipedes are flattened and possess a segmented body with a pair of legs per segment. Each trunk segment consists of a dorsal shield (tergite) and a ventral shield (sternite) covered by a relatively rigid layer, the cuticle, and is separated by a flexible membrane. Periodically centipedes shed the cuticle to allow for growth (ecdysis).[2]

The centipede head bears a pair of antennae and a varying number of ocelli or paired compound eyes; some cavernicolous centipedes are blind. The mouth is situated ventrally and possesses 3 mouthparts. The legs of the first trunk segment are modified and are named forcipules, which contain a poison gland and large poison claws that partially cover the mouthparts and form part of the feeding apparatus. The last pair of legs (anal legs) is not used for locomotion and can be modified for defensive or sensory function, or prey apprehension, and has great importance in the courtship of a variety of species.[2]

The respiratory system is basically tracheal with respiratory spiracles located on the segments, but never on the forcipular or terminal segments. There is a variety of spiracle structures with a few authors suggesting that some species are capable of closing their spiracles, while others have contested this hypothesis.[4]

Much of the research and the descriptions of centipedes are dated, and the nomenclature of the anatomic structures can be conflicting between authors. Bonato et al.[5] proposed a common terminology. Other anatomic and physiologic features are described in the following text.

There are many successful breeders in the hobby, but wild-caught centipedes still represent most of the animals sold in the pet trade. There are

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no data available regarding the most common species kept in captivity, but the author's experience and some hobbyist's websites indicate that the giant centipedes from the genus *Scolopendra* are the most common sold for pets and maintained in zoological displays. Some popular species include *Scolopendra morsitans*, *Scolopendra subspinipes*, *Scolopendra gigantea*, *Scolopendra cingulata*, *Scolopendra heros*, *Scolopendra polymorpha*, and *Scolopendra dehaani*. Common species from other genera are *Hemiscolopendra chilensis* and *Ethmostigmus* spp. For the clinician, a basic knowledge of animals found within the genus *Scolopendra* is advisable.

HUSBANDRY

Nutrition

Centipedes are carnivorous. The aggressive behavior of these arthropods predisposes attacks to almost everything introduced to their habitat; thus, prekilled prey items can be fed. Insect prey (e.g., crickets, cockroaches, and mealworms) can be offered weekly to juvenile centipedes or every 2 weeks to adults. Wild-caught insects should be avoided owing to the risk of pesticide contamination and the introduction of parasites. Small vertebrates (e.g., pinky mice) can be offered once a month to larger species.

As voracious and proficient predators, centipedes can subdue larger prey. Care must be observed when outsized prey items are offered as some insects and rodents can cause injuries to the animal's exoskeleton, resulting in hemolymph leakage.

Despite the fact that a few references indicate a weekly feeding program, observations by the author over a period of 2 years indicate that a biweekly schedule is sufficient for the juveniles of larger species to maintain normal growth and for adults to sustain their body weight and activities. For smaller species and the very young, a weekly schedule is recommended.

Water must be available at all times. A shallow dish is sufficient for the animal's needs while providing a source for environmental humidity. Poor water quality, presentation, and availability are often factors related to captive invertebrate morbidity and mortality.[6]

Housing

Centipedes are nocturnal, exploring their entire enclosure at night. For this reason, the terrarium's surface area must be larger than height. The author suggests a minimum size of 60 cm in length and width for larger species. The height should be sufficient enough to provide a substrate depth commensurate with the species' requirement for burrowing.

Owners must be aware that centipedes are aggressive, venomous, and potentially dangerous for humans, especially children. For these reasons, precautions are required for the animal's enclosure (e.g., escape proof). Centipedes are not able to climb smooth surfaces (e.g., glass and acrylic); therefore, it is advisable to have sufficient height between the substrate surface and the top of the terrarium; however, a locked lid is recommended. It is very important not to provide high structures within the enclosure, preventing the animal from reaching the lid by climbing branches and stones. In the author's experience, centipedes always try to find a way out of their enclosure.

Temperature and Humidity

Centipedes can easily dehydrate, owing to several anatomic and physiologic characteristics. Water loss via respiratory spiracles, excretion of ammonia as the primary nitrogen waste requiring relatively large amounts of water for dilution, and the lack of a waxy waterproof layer on the exoskeleton are some of the features that facilitate water loss under inadequate conditions.[2,3,7] A specific identification of the species being maintained is the most relevant information needed before correcting or confirming the proper humidity level and temperature within the enclosure. In the author's experience, centipedes require a minimum humidity level of 70%. This lower limit varies among species, but is never less than 70%. Rainforest species require higher humidity levels than desert centipedes.

It is very important to keep the enclosure well ventilated to maintain the desirable humidity. A grid cover and small holes on the sides provide the necessary air flow, but care is required to ensure that the hole diameter is small enough to prevent escape.

Temperate species should be in an environment of 20°C to 25°C, whereas tropical species should be maintained at 25°C to 28°C.[2] A review of research on spiders has demonstrated that variable temperatures are preferable for better development[8]; therefore, a temperature gradient is required in the terrarium. This gradient can be achieved with a higher temperature on one side of the terrarium and a lower temperature on the opposite side, creating an optimum average in the